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Accidents.

Safety on the farm--why not? By Frank H. Harrison. Implement and tractor. v.53,no.24. November 26, 1938. p.10,22.
Accurate comparative statistics as regards accidents peculiar to farms are not available on national basis. However, where statistics are kept by state agricultural associations and other bodies, record shows no improvement, and third of reported serious and fatal accidents are charged to farm machinery.

Agricultural Engineering.

What the Ag engineers listened to and argued about. Farm implement news. v.59,no.25. December 15, 1938. p.29-31.

Agriculture.

Agricultural adjustment, 1937-1938; a report of the activities carried on by the Agricultural Adjustment Administration. Washington, U.S. Govt. print. off., 1939. 385p.

Agricultural extension service, Missouri college of agriculture; Annual report for 1938. Columbia, Mo., 1939. 41p. University of Missouri. Agricultural extension service. Circular no.400.
Agricultural engineering, p.27-29.

Arizona handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 35p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Barriers to internal trade in farm products. By G. R. Taylor and others. Washington, U.S. Govt. print. off., 1939. 104p.
U.S. Department of agriculture. A special report to the Secretary of agriculture by the Bureau of Agricultural Economics.

California handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 48p.
U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Agriculture. (Cont'd)

Colorado handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 48p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Economic study of farm organization and operation in the High Plains cotton area of Texas. College station, Tex., 1939. 75p. Texas agricultural experiment station. Bulletin no.568.

Fiftieth annual report, 1937. College station, Tex., 1938. 321p. Texas agricultural experiment station.

Forty-eighth annual report for the fiscal year ended June 30, 1938. Pullman, Washington, 1938. 103p. State college of Washington. Agricultural experiment station. Bulletin no.368.

Golden anniversary report for the fiscal year ending June 30, 1938. Gainesville, Fla., 1938. 198p. University of Florida. Agricultural experiment station.

Idaho handbook. 1939 agricultural and range conservation program. Washington, U.S. Govt. print. off., 1939. 39p. U.S. Department of agriculture. Western division.

Kansas handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 54p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Method and effect of deep tillage. By G. Douglas Jones. Agricultural engineering. v.20,no.2. February, 1939. p.61-63. We need science in our agriculture, and when it is applied managerial type farmer will need services of agricultural engineer to explain or interpret physics of plants and soils. It is true that there has been vast amount of agricultural research, and many facts have been established, but many more must be discovered.

Montana handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 43p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Nevada handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 35p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

New Mexico handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 45p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Agriculture. (Cont'd)

North Dakota handbook. 1939 agricultural and range conservation programs. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Oregon handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 44p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Part-time farming in the United States; selected list of references. Compiled by H. E. Hennefrund. Washington, D.C., 1939. 272p. U.S. Bureau of agricultural economics. Agricultural economics bibliography no.77. Mimeographed.

Report of progress for year ending June 30, 1938. Orono, Me., 1938. 332p. Maine agricultural experiment station. Bulletin no.391.

Some trends in Utah's agriculture. By W. U. Fuhriman. Logan, Utah, 1939. 30p. Utah state agricultural college. Agricultural experiment station. Bulletin no.286.

State and federal agricultural publications applicable to Tennessee valley area. Washington, 1939. 88p. U.S. Department of agriculture. Mimeographed.

Utah handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 38p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Washington handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 42p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Wyoming handbook. 1939 agricultural and range conservation programs. Washington, U.S. Govt. print. off., 1939. 44p. U.S. Department of agriculture. Agricultural Adjustment Administration. Western division.

Air Conditioning.

Air conditioning and food preservation. By W. H. Cook. Ice and cold storage. v.41,no.489. December, 1938. p.206. Importance of temperature, humidity and air composition.

Air-conditioning equipment. By Margaret Ingels. Industrial and engineering chemistry. v.30,no.9. September, 1938. p.980-983. Design, selection, and efficiency.

Air Conditioning. (Cont'd)

Characteristics of asbestos ducts are determined in Mellon Institute study. Air conditioning and refrigeration news. v.26,no.1, serial no.511. January 4, 1939. p.14.

Metal and asbestos ducts in air conditioning systems. By R. H. Heilman and R. A. MacArthur. Refrigerating engineering. v.37,no.2. February, 1939. p.105-111. Presents some characteristics of metal and asbestos ducts in form suitable for use by designers of air conditioning systems. Data on friction loss, sound attenuation characteristics, and heat transmission, are given.

Performance of coils for dehumidifying air. By William Goodman. Heating, piping and air conditioning. v.11,no.2. February, 1939. p.83-86. New and simple formulas are developed by author for computing final dry and wet bulb temperatures of air leaving coil. Particularly noteworthy is fact that final wet bulb depression of air is shown to depend upon initial wet bulb depression of air for both direct expansion and counterflow coils. This makes computation of final dry bulb temperature work of moment.

Refrigeration as applied to air conditioning. By John R. Hertzler. Ice and refrigeration. v.96,no.2. February, 1939. p.105-107.

Symposium on drying and air conditioning. Industrial and engineering chemistry. v.30,no.9. September, 1938. p.993-1010. Rotary dryers. Roto-Louvre dryer. Rotary steam-tube dryer. Vertical turbodryers. Spray drying. Filter drying. Aeroform dryer. Drum drying. Rotary vacuum drying.

To humidify or not-- Consumers' digest. v.4,no.5. November, 1938. p.39-42. Artificial humidification of homes in winter has commonly been supposed to be highly desirable improvement in home heating, from standpoint of health, economy, and prevention of excessive drying out of furniture. It appears, however, that first two of those suppositions are not supported by facts: that usual relative humidity, without special adjustment or equipment, is sufficiently high, and that there is an important disadvantage to humidifying. This disadvantage is one that applies with particular force to houses with outside walls that have been insulated without being specially and carefully moistureproofed. Unless such walls have been made impermeable to water vapor on room side, artificial humidification had best be avoided.

Alcohol fuel.

Alcohol motor fuel in the United States. By P. Burke Jacobs. Agricultural situation. v.22,no.12. December, 1938. p.20-23. As fuel for use in present motor cars, alcohol or alcohol-gasoline blends will cost more than straight gasoline, and this relative difference in fuel cost must be considered. Furthermore, because present crops are inadequate for large-scale alcohol blend motor fuel program, use of considerable portions of present crops will advance raw material prices.

Alcohol fuel. (Cont'd)

Potato alcohol plant operates. The news letter. v.22,no.2. March, 1939. [p.1]. Plant is operated by University of Idaho and is expressly for purpose of learning commercial possibilities of getting alcohol for fuel blending.

Animals, Effect of temperature on.

Reactions of the dairy cow to changes in environmental temperature. By W. M. Regan and G. A. Richardson. Journal of Dairy Science. v.21,no.2. February, 1938. p.73-79. References, p.79. It was found that as room temperature was increased, there was uniform increase in respiration rate, which approximately doubled for each increment of 18 degrees F.; that there was decrease in pulse rate; and that at 80 degrees or 85 degrees F., depending upon breed, pyrexial point was reached where animals were no longer able to maintain heat balance.

Aqueducts.

Colorado river aqueduct. Engineering news-record. v.121,no.21. November 24, 1938. p.637-638. Unprecedented project to bring water to the Los Angeles region from the Colorado river made practical by skillful engineering and able construction management.

Estimating the cost of arc welding. By R. F. Wyer and S. C. Smith. General electric review. v.41,no.11. November, 1938. p.495-501.

Governing factors in aqueduct design. By D. B. Gumensky. Engineering news-record. v.121,no.21. November 24, 1938. p.653-658. Designs of structural and hydraulic features were developed simultaneously with final location surveys and cost determinations.

Major problems of aqueduct location. By Julian Hinds. Engineering news-record. v.121,no.21. November 24, 1938. p.646-652. Hundreds of miles of heretofore unmapped desert required thorough examination prior to deciding where to divert, whether to use gravity or pumps.

Architecture.

Architecture of Denmark and her former provinces. Text by Aymar Embury, II. Washington, D.C., Ludowici-Celadon company, 1939. 15p. Tuileries brochures. v.15,no.1.

Belts.

Behavior of belts on pulleys. By F. W. Scott. Southern power journal. v.57,no.1. January, 1939. p.45-46. Centrifugal force, centrifugal tension, belt contact and slack belts--calculations.

Brooders, Electric.

Battery brooding. By Clarence E. Lee. New England homestead. v.112,no.3. February 11, 1939. p.4,22.

Turkey and chicken brooding with soil heating cable. By Paul Ford. Agricultural engineering. v.20,no.2. February, 1939. p.54.

Building Construction.

Announcing TruCost estimating service. By A. W. Holt. American builder and building age. v.60,no.3. May, 1938. p.60-66.

Erection methods on framing. By C. V. Olson. American builder and building age. v.60,no.3. May, 1938. p.75-76,110,112.

Prefabricated all-steel units for low-cost buildings. By Ray Crow. Agricultural engineering. v.20,no.1. January, 1939. p.27-29. Factors favorable to use of steel: 1. Steel is unshrinkable, changing but little from variations in temperature, and none from effects of moisture. 2. When properly proportioned and used, steel has greater strength and rigidity for area and weight of section than commonly used material, therefore it may be produced and fabricated at a comparatively low cost. 3. Steel is nonporous, therefore, wind and moisture-proof no matter how thin. 4. Steel can be manufactured in large sections, thereby reducing joint lengths through which water and air may filter. 5. Under modern conditions of manufacture steel is practically uniform in strength, therefore requires only small factor of safety in design. 6. Steel lends itself to machine forming with low applied labor costs, therefore is economical where parts are fabricated and assembled in quantity. 7. When kept dry, either by location or by coating with moisture-proof material, steel will last almost indefinitely. 8. In factory operation there is only small loss of steel because of wide variety of sizes, shapes and thicknesses from which to choose desired items. 9. Steel is non-combustible; it is vermin and insect proof and presents surface easily kept clean and sanitary. 10. Weight per square foot of wall or roof area fabricated from steel material is lighter than that from other material. Following factors that militate against use of steel: 1. It is better conductor of heat than certain other building materials, therefore, it requires somewhat more insulation under certain conditions. 2. It does not lend itself to hand-forming or shaping in field, except when used in form of thin sheets; therefore, it is not adaptable to general field use, except in precut or prefabricated units. 3. For light loads and long spans, if metal is so distributed as to prevent excessive deflection when extreme fibres are stressed to safe working limits, webs and flanges of joists, rafters, and other sections used as beams are so thin as to be easily distorted by shipping and handling. 4. In presence of moisture and oxygen unprotected steel is subject to corrosion and under certain conditions will deteriorate rapidly.

Building Construction. (Cont'd)

Stairways. Architectural record. v.85,no.2. February, 1939. p.73-80.

Structural properties of "Steelox" constructions for walls, partitions, floors, and roofs sponsored by Steel buildings, inc. By H. L. Whittemore, and others. Washington, U.S. Govt. print. off., 1939. 17p. U.S. National bureau of standards. Building materials and structures. Report BMS12.

Tricks of hanging wall paper. Popular mechanics. v.70,no.4. October, 1938. p.594-599.

Building Materials.

Building with rock. By K. B. Huff. Columbia, Mo., 1939. 15p. University of Missouri. Agricultural extension service. Circular no.398.

Comparison of standard tests on building brick by two laboratories. By W. J. Krefeld and J. W. McBurney. ASTM Bulletin. No.96. January, 1939. p.7-11. For purpose of determining whether current Standard Methods for Testing Brick (C 67-37) describe techniques of testing brick in sufficient detail so that two laboratories working independently on same or comparable samples would be in essential agreement, National Bureau of Standards and Engineering Materials Laboratory of Columbia University conducted joint investigation on brick testing, using samples in part comparable and in part identical. It is concluded that current water-absorption tests are of satisfactory accuracy and reproducibility. Compressive strength test is unsatisfactory in comparison with water-absorption test.

Douglas fir plywood (Domestic grades). 3d ed. Commercial standard CS45-38. U.S. Govt. print. off., 1939. 20p. U.S. Department of commerce. National bureau of standards.

New building materials research established at Mellon Institute. Refrigerating engineering. v.37,no.2. February, 1939. p.99. Fellowship will conduct fundamental research on various products manufactured by donor company, with objective of developing new processes and technics which will have broad application in field of building materials. This investigational work will augment regular research activities carried on by donor.

Chemistry, Technical.

Artificial fibers from coal contemplated in Germany. Foreign agriculture. v.3,no.1. January, 1939. p.39. Experiments recently conducted at Technische Hochschule in Berlin have demonstrated possibility of producing cellulose from brown coal. Significance of development lies in fact that, if costs of production are not prohibitive, it will furnish another raw

Chemistry, Technical. (Cont'd).

material for production of cellulose from which paper and synthetic fibers can be produced. There is as yet, however, no information as to probable cost of production, though it is pointed out that, compared with wood, lignite is very low in price. Although production costs of artificial fibers in Germany have been reduced in recent years, they are still high compared with prices of cotton and other natural fibers. Moreover, additional unfavorable factor has been fact that amount of timber cut for cellulose manufacture has exceeded new growth.

"Farm chemurgy" aux États-Unis. By S. Jamin. Revue de chimie industrielle. v.47,no.563. November, 1938. p.335-339. "Farm chemurgy" in the United States. Utilisation of the agricultural product through chemical use of surpluses and waste products.

Phenols from cornstalk alkali lignin: preparation by destructive distillation and separation by fractional distillation. By Grover Leon Bridger. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1174-1180.

Condensers.

How condensers get that way. Power. v.83,no.4. April, 1939. p.66-69.

Conservation of Resources.

Soil and water conservation experiment station. G. M. Horner in charge. In Forty-eighth annual report for the fiscal year ended June 30, 1938. Pullman, Wash., 1938. p.89-91. State college of Washington. Agricultural experiment station. Bulletin no.368. Effect of plant cover on run-off and erosion. Movement and balance of soil moisture. Terracing studies.

Corrosion.

Atmospheric exposure tests of wire and fencing. In Fiftieth annual report, 1937. College station, Tex., 1938. p.155. Texas agricultural experiment station.

Corrosion and erosion in river and harbor structures. By Fred Dieffenbach. Industrial and engineering chemistry. v.30,no.9. September, 1938. p.1014-1020. Very severe corrosion-erosion conditions exist in Monongahela River as result of highly acid sand-bearing water. Cost of such corrosion-erosion is so great as to warrant development of means of preventing it. This corrosion-erosion is best corrected in most cases by use of corrosion-erosion resisting materials, such as fortified paints or enamels, corrosion-resisting wrought and cast iron and steel, nickel-copper alloy (Monel metal), and similar materials.

Corrosion. (Cont'd)

Corrosion control--studies and operating experiences: a round table discussion. By Thomas H. Wiggin and others. American water works association. Journal. v.30,no.8. August, 1938. p.1342-1387.

Relation of soil properties to corrosion of buried steel. By Walter F. Rogers. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1181-1188. Studies were made of relation of soil volume--water content, soil pH, and soil electrical resistivity to corrosion of buried steel pipe. Data were developed from laboratory tests to show importance of each of these factors. Results were extended to field measurements of soil resistivities and pH values vs. actual corrosion rates to show correlation between field and laboratory results. It was found that while both electrical resistivity and pH of soils have some effect on soil corrosion rate, governing factor is soil volume--water content.

Cotton Gins and Ginning.

Power cost averages for gins. By Orville Adams. Cotton and cotton oil press. v.40,no.3. January 21, 1939. p.3-4.

Report on cost of ginning ready for distribution. By W. E. Paulson. Cotton ginners' journal. v.10,no.3. December, 1938. p.9-10. Has been published in Mimeographed Progress Report No.570 of Texas agricultural experiment station, entitled "Cost of Ginning."

Cotton Machinery.

Mechanical harvesting of cotton. By D. T. Killough and others. In Fiftieth annual report, 1937. College station, Tex., 1938. p.79-80. Texas agricultural experiment station.

Mechanical harvesting of cotton. By H. P. Smith and others. In Fiftieth annual report, 1937. College station, Tex., 1938. p.152-153. Texas agricultural experiment station.

Overhead cleaning-drying systems for seed cotton. By Charles A. Bennett and Charles S. Shaw. Cotton ginners' journal. v.10,no.3. December, 1938. p.5-6,18-19.

Relation of mechanical harvesting to the production of high-grade cotton. By Charles A. Bennett. Cotton ginners' journal. v.10,no.2. November, 1938. p.5-6.

Dairy Farm Equipment - Sanitation.

Cleaning milking machines. By L. H. Burgwald. Rev. by F. M. Grant. Washington, U.S. Govt. print. off., 1939. 14p. U.S. Department of agriculture. Farmers' bulletin no.1315.

Dairy Farm Equipment - Sanitation. (Cont'd)

Cleaning of milk utensils. By L. H. Burgwald. Bimonthly bulletin. Ohio agricultural experiment station. v.24,no.196. January-February, 1939. p.4.

Engineering problems in milk sanitation. By Leslie C. Frank. Civil engineering. v.9,no.4. April, 1939. p.224-226. Describes variety of engineering problems in milk control, and suggests that instruction in that type of work might well be included in the sanitary engineering curriculum.

Methods of making sanitation ratings of milk sheds. By L. C. Frank and W. N. Dashiell. Washington, U.S. Govt. print. off., 1938. 14p. U.S. Public health service. Reprint no.1970.

Dams.

Boca dam, truckee storage project: Nevada-California. By F. M. Spencer. Reclamation era. v.29,no.2. February, 1939. p.21-24.

Grand river dam. By H. D. Robards. Power plant engineering. v.43,no.2. February, 1939. p.107.

Graphical arch analysis applicable to arch dams. By Carl H. Heilbron, Jr. and William H. Saylor. Proceedings: American society of civil engineers. v.65,no.1. January, 1939. p.3-27. In this paper is presented a system, mostly graphical, for analyzing unsymmetrical fixed-end arches of variable thickness and radius under loads of any type. General equations of arch analysis are first written, from which deflections and stresses in arch may be obtained. These equations are then modified to include concept of "trial crown thrust," this concept making it possible to obtain arch stresses and deflections with all necessary accuracy when greater part of computations are performed graphically. Graphical constructions used in evaluating equations are developed, procedure is outlined in detail, and illustrative example is given.

Imperial dam, All-American canal system, Boulder canyon project. By D. M. Forester. Reclamation era. v.29,no.2. February, 1939. p.28-36.

Measuring dam behavior. By Douglas McHenry and Roy W. Carlson. Engineering news-record. v.122;no.13. March 30, 1939. p.58-60. Special instruments for measuring temperature, strains, joint openings, uplift, and even stress in concrete dams have been developed and promise to increase our knowledge and improve design. Results from instrument measurements at Norris Dam indicate that refinements in construction procedure will improve concrete gravity dams more than changes in design practice.

Some engineering features in the construction of the Grand Coulee dam. By A. A. Merrill and J. R. Murphy. General electric review. v.41,no.11. November, 1938. p.470-478. Outline of

Dams. (Cont'd)

Columbia River basin reclamation project--the Grand Coulee dam--possibilities relative to irrigation and power production--river diversion--removal of overburden--mixing and placing of concrete.

Some remarks on the design of dams: abstract. By S. Rohringer. Royal Hungarian Ministry of agriculture. Hydraulic proceedings: short summaries of the articles. 1938--I. p.17. In the Hungarian text p.65-70.

Steel facing for dams. By R. T. Logeman. Civil engineering. v.9,no.1. January, 1939. p.7-10. Economies in gravel and rock fill structures made possible by use of membrane of bolted and welded design.

Diesel engines.

Diesel power for Iowa farms. By C. M. Stanley. Power. v.83,no.4. April, 1939. p.50-52. Interconnection between two REA diesel plants, of similar design, cuts investment, increases operating flexibility. Stations follow best modern practice with reinforced concrete buildings, metal-clad switchgear, and complete metering.

Drainage.

Approach to better drainage practice. By I. D. Mayer. Agricultural engineering. v.20,no.2. February, 1939. p.64,70.

Equipment for maintaining small drainage channels. By D. A. Isler. Agricultural engineering. v.20,no.2. February, 1939. p.65-66,70.

Explosives adapted to drainage work. By L. F. Livingston. Agricultural engineering. v.20,no.1. January, 1939. p.23-24.

Farm drainageways and outlets. By C. L. Hamilton. Soil conservation. v.4,no.7. January, 1939. p.156-160. Planning run-off disposal systems. Selection of type. Pretreatment of drainageways and outlets.

Modern drainage and ditching equipment. By S. J. Wright and J. H. Blackaby. In Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.117-123p.

Drying (Crops).

Low-cost hay drying. By J. W. Weaver, Jr. and C. E. Wylie. Agricultural engineering. v.20,no.1. January, 1939. p.13-14,16. Any method of artificially drying hay in area must involve low first cost and low operating cost. System must be of relatively small capacity, requiring no more labor than present method of harvesting hay. Conventional machinery and equipment should be used and results in improved quality must be sufficient to justify investment.

Egg Coolers.

Evaporation egg cooler continues to prove its value. In Science serving agriculture. Report of Agricultural experiment station, Oklahoma A. & M. college for July 1, 1936 to June 30, 1938. Stillwater, Okla., 1939. p.154-156.

Electric Power-Costs.

Cost of electric power. Hoard's dairyman. v.83,no.24. December 25, 1938. p.622. Table gives some of commoner uses of electricity on farm and in farm home, and also probable amount of energy required to operate apparatus.

Electric Wiring.

Wiring:--your link to electrical living. By Frank J. G. Duck. Dakota farmer. v.58,no.21. November 19, 1938. p.482.

Wiring:--your link to electrical living. By Frank J. G. Duck. Dakota farmer. v.58,no.22. December 3, 1938. p.502-503. Part II--Wiring the farm home.

Wiring:--your link to electrical living. By Frank J. G. Duck. Dakota farmer. v.58,no.23. December 17, 1938. p.516. Part III.-Wiring and lighting individual rooms.

Wiring:--your link to electrical living. By Frank J. G. Duck. Dakota farmer. v.59,no.1. January 14, 1939. p.10-11. Part IV.--Wiring and lighting farm buildings.

Electricity - Distribution.

Making electric service available to farmers. By E. C. Easter. Agricultural engineering. v.20,no.2. February, 1939. p.51-53.

Rural Kva. profitably released by capacitors. By F. M. Starr. Electrical world. v.110,no.25. December 17, 1938. p.35-36,79. Table gives value of capacitors on 4-Kv. single-phase rural lines in ratio to released line capacity.

Electricity on the Farm.

Electricity use growing in Idaho. The news letter. v.22,no.2. March, 1939. [p.2.] Rural electrification research conducted by experiment station and state committee.

Proving farm offers comparative costs. Electrical world. v.3, no.10. March 11, 1939. p.100. Comparative costs of many typical farm operations before advent of electric service and afterward will be one of the major contributions to the industry by the new poultry proving farm recently opened at New Hope, Pa., and sponsored by Westinghouse and Philadelphia Electric.

Electricity on the Farm. (Cont'd).

Some phases of rural electrification in Quebec. By F. L. Foster. Canadian society of technical agriculturists review. No.4. March, 1935. p.195-197.

Some things a farmer should know about electricity. By H. L. Garver. Pullman, Wash., 1939. 38p. State college of Washington. Agricultural experiment station. Popular bulletin no.157. List of references: p.39-40.

Use of electricity in agriculture. L. J. Smith in charge. In Forty-eighth annual report for the fiscal year ended June 30, 1938. Pullman, Wash., 1938. p.10. State college of Washington. Agricultural experiment station. Bulletin no.368.

Engines.

Ignition and combustion process in the coal dust engine. By W. Wentzel. Reprint from "Fuel in Science and practice." v.11,1932. p.177-196,222-228.

Motor-car engines in England. By Alex Taub. S.A.E. Journal. v.42,no.6. June, 1938. p.229-242. Variation in engineering practice between European and American motor cars is to be expected. Many of these differences are brought about by local conditions and must be accepted. However, there are practices that vary from American that do not justify themselves by result or local conditions. Two outstanding are bore wear and carburetion. Paper deals only with spots of these two differences.

Erosion Control.

Beach erosion studies. By Earl I. Brown. Proceedings: American society of civil engineers. v.65,no.1. January, 1939. p.69-91. Items of information considered necessary in comprehensive beach erosion study, reasons for desiring each particular item, and some general observations on design of protective works are offered, in some detail, in this paper. Presentation is made for two reasons: (1) That engineers interested in beach protection may have the advantage of experience gained by Beach Erosion Board, United States War Department (under Chief of Engineers, U.S. Army), as to factors involved in study of beach erosion; and (2) that items of information now believed best suited to purpose by Board may be subject of full and free discussion by all engineers interested.

Conserving soil by contour farming. By M. W. Clark and W. R. Tascher. Columbia, Mo., 1939. 19p. University of Missouri. Agricultural extension service. Circular no.399. (Revision of Circular 365).

Erosion and related land use conditions on the Elm creek watershed, Texas. By Harvey Oakes and Elias Somerville. Washington, U.S. Govt. print. off., 1939. 29p. U.S. Department of agriculture.

Erosion Control. (Cont'd).

Erosion and related land use conditions on the Minot area, North Dakota. By Nicholas Holowaychuk and W. C. Boatright. Washington, U.S. Govt. print. off., 1938. 37p. U. S. Department of agriculture. Soil conservation service.

Hands to save the soil. Washington, U.S. Govt. print. off., n.d. No paging. U.S. Civilian conservation corps.

Measuring the effect of land use on erosion. By H. L. Thomas and others. Soil conservation. v.4,no.8. February, 1939. p.190-191. System especially applicable on small watersheds.

Potatoes and soil erosion. Orono, Me., 1939. 6p. University of Maine. Agricultural extension service. Circular no.131.

Soil conservation approach to proper land use. By C. B. Manifold. Soil conservation. v.4,no.8. February, 1939. p.185-189. Table shows land-use changes due to soil conservation program.

Soil erosion and conservation in the United States. Engineering. v.147,no.3811. January 27, 1939. p.85-87.

Evaporation.

Evaporation of water into quiet air from a one-foot diameter surface. By B. F. Sharpley and L. M. K. Boelter. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1125-1131. Evaporation from one-foot diameter pan of distilled water into quiet air at 53 per cent humidity was measured for water temperatures between 63 deg. and 93 degrees F. Surface of water was at level of surroundings. In critical region, corresponding to water temperature of 69.4 deg. F., buoyant effects of mixture at water surface and far away are equal. Acceptance of thermal free convection-diffusional free convection analogy and generalization to other fluids is not urged until substantiated by further experimental results.

Rate of evaporation from a free water surface by a perpendicular air stream. By M. C. Molstad and others. Industrial and engineering chemistry. v.30,no.10. October, 1938. p.1131-1138. Circular water surfaces of areas ranging from 0.05 to 0.37 square foot have been subjected to perpendicular air stream having velocities from 3 to 15 feet per second [corresponding to mass velocities, G, of approximately 800-4000 pounds/ (square foot) (hour)]. Tests at prevailing room temperature and humidity and at lower velocities gave evaporation coefficients [k'- pounds evaporated/ (square foot) (hour) (unit humidity difference)] which were about 50 per cent greater than accepted coefficients for evaporation of water to air stream flowing parallel to surface. At higher velocities coefficients were about 10 per cent above those obtained with parallel flow by Lurie and Michailoff but 30

Evaporation. (Cont'd).

per cent below those obtained by Shepherd, Hadlock, and Brewer. No explanation of this anomalous situation at higher velocities is offered. In limited number of drying tests on Celotex insulating board, evaporation coefficients during constant rate period were substantially same as those for water under same conditions.

Fans.

Mechanical draft fans--selection--installation--operation. By P. V. Smith. Southern power journal. v.57,no.2. February, 1939. p.66-69. Dependable supply of air--under complete control and at lowest possible total cost--can be had only through the combination of high quality equipment properly installed and maintained. Competent engineering gets results.

Farm buildings.

Farm building made easier--and profitable for continental dealers. Farm implement news. v.60,no.2. January 26, 1939. p.26. Continental Steel Corp., Kokomo, Ind., has worked out orderly method of planning and erecting farm buildings, one that will save both farmer and dealer hours in planning and drawing up bills of material, in which certain necessary materials are always forgotten until structure is in process of erection.

Plans of farm buildings for Western states. Washington, U.S. Govt. print. off., 1939. 120p. U.S. Department of agriculture. Miscellaneous publication no.319.

Technical aspects of the land settlement of the "Agro Pontino". By Bruno Ahrends. Monthly bulletin of agricultural science and practice. Year 29,no.11. November, 1938. p.427T-442T. Settlers' houses. Types of buildings. Construction of buildings.

Farm Chemurgic Council.

Chemurgic council moves headquarters to Columbus. Oil, paint and drug reporter. v.134,no.22. November 28, 1938. p.38. New national headquarters will be located at 50 West Broad Tower. With regional chemurgic councils now active in thirty-one States, return of offices to middle west will serve to facilitate council's work as clearing house for information for its national committees and affiliated organizations.

Farm Machinery--Housing.

Winter protection for farm machinery. By E. N. Humphrey. Utah farmer. v.58,no.10. January 10, 1939. p.15.

Farm Machinery and Equipment.

Canadian census records of farm implements and machinery. By O. A. Lemieux. Canadian society of technical agriculturists review. No.4. March, 1935. p.178-185. Table 2.--Total value of implements and machinery and average value per farm and per acre of improved land, by provinces, 1901-1931.

Combine efficiency tests. Pennsylvania farmer. v.119,no.4. August 13, 1938. p.20. Careful tests made at Ohio State University with small combines showed surprisingly low grain losses and high general efficiencies. During 1937 tests there were heavy rains, most of grain had many green weeds, and complete lodging was common. In spite of these conditions and excessive loss behind cutter bar, highest total loss for combine after proper adjustment was 125 pounds of grain per acre in heavy wheat while some went as low as 41 pounds per acre on wheat making 16.7 bushels per acre. These tests also showed great importance of proper adjustments in reducing grain losses, especially when conditions are unfavorable.

Corn planter fertilizer attachments. By M. G. Huber. American fertilizer. v.90,no.1. January 7, 1939. p.8-9.

Equipment problems in conservation work. By G. E. Ryerson and W. X. Hull. Soil conservation. v.4,no.7. January, 1939. p.181-184.

Experience in the utilization of farm machinery for greater efficiency. By B. Gwynne Burr. Agricultural engineering. v.20,no.2. February, 1939. p.57-60,63. Tractor maintenance systematized. Breakdown of machines during harvest. Daily servicing of machines. Plowing in soil with a draft of 1000 lb. per foot. Checkrowing corn. Operating cost figures.

"Family farming for security" the keynote of the California farm machinery conference. By F. Hal Higgins. Farm implement news. v.60,no.2. January 26, 1939. p.36-37.

Farm machinery from the standpoint of farm management in western Canada. By R. W. Gowland. Canadian society of technical agriculturists review. No.4. March, 1935. p.186-190. Equipment considered in its general relation to farming business and attempt made to show some of conditions that exist on average farm to-day. Trends, improvements, and new developments briefly considered and some description of uses and adaptation of some individual machines will be given.

Harvesting and processing equipment for walnuts. By H. B. Walker. Agricultural engineering. v.20,no.2. February, 1939. p.71-72.

Farm Machinery and Equipment. (Cont'd).

An internal-combustion nut cracker. By Roy Bainer and C. E. Barbee. Agricultural engineering. v.20,no.1. January, 1939. p.21-22. Purpose of machine is to puncture or cut nut shell, then introduce through this shell aperture, explosive gas mixture to fill space between shell and kernel of nut, and lastly to explode gas to shatter and separate shell from kernel.

Land preparation for sugar cane. By James A. Gibb. Facts about sugar. v.33,no.12. December, 1938. p.42-47. Discussion of methods and implements for use with tractors in deep tillage operations for various soil conditions.

Largest big plow. By Harry H. Hyatt. Soil conservation. v.4,no.6. December, 1938. p.131-132. Plows were devised for three purposes: (1) reclamation of good agricultural land that has been buried under deposit of sand brought in by flood waters, (2) elimination of morning glory or other noxious weeds by burying them deep enough in soil to kill them, and (3) rejuvenation of some of alluvial and recently deposited soils.

Machines in Soviet agriculture. By J. W. Pincus. Soviet Russia today. v.7,no.10. February, 1939. p.17,30,32.

Mechanization. By S. J. Wright. Journal of the Ministry of agriculture. v.45,no.8. November, 1938. p.767-770.

Mechanizing forage crop handling. By F. W. Duffee. Agricultural engineering. v.20,no.2. February, 1939. p.47-49. Brief historical review of development of hay-machinery indicates that our modern types had their inception about 1870 to 1885, or upwards of 60 years ago. During this period of 60 years there has been no further general development of methods, although there has been marked development of design details, as well as materials of construction. During this same period we have seen all other major field operations completely mechanized, machines developed to a high degree of efficiency, and their use quite widely adopted by farmers. All along line mechanical power and new machines are rapidly taking place of methods that require large amounts of hand labor, but hay-making on most farms still requires hard hand labor in loading, and hand pitching in field and in mowing away.

Need for greater mechanization of eastern Canadian farms. By A. A. Scarlett. Canadian society of technical agriculturists review. No.4. March, 1935. p.163-169. Education in the use of farm machinery. Effect of farm mechanization on labor. Place in farm management.

Ein neues vielfachgerät. By W. Manhardt. Technik in der landwirtschaft. v.20,no.2. February, 1939. p.30-33. A new cultivator.

Farm Machinery and Equipment. (Cont'd).

New harvester. New England homestead. v.112,no.3. February 11 1939. p.8. Smaller-sized power equipment looms as a major contribution to the future of family-operated farms.

New machinery items. Farmer. v.57,no.4. February 25, 1939. p.4,16.

New trends in farm machinery. By W. M. Hurst. Agricultural leaders' digest. v.20,no.2. February, 1939. p.10. Present trend of improvement in farm machinery is toward durability, simplicity, speed, and convenience of operation. There is trend toward production of machinery suitable for small or family-size farm including general-purpose tractors, "baby combine" harvesters and other field machinery adapted for light tractor power.

Production requirements for crops and livestock in the bluegrass region of Kentucky. By W. L. Rouse and G. B. Byers. Lexington, Ky., 1938. 127-223p. Kentucky, Agricultural experiment station. Bulletin no.383.

Progress in sugar beet machinery investigations. By H. B. Walker. Farm implement news. v.60,no.2. January 26, 1939. p.39-41.

Reappraising the farm equipment stocks. By George L. Merton. Magazine of Wall street. v.63,no.10. February 25, 1939. p.560-561,585-586. Current prices over-discount unfavorable factors.

Recent improvements in the design and construction of agricultural machinery. By G. T. M. Bevan. Canadian society of technical agriculturists review. No.4. March, 1935. p.170-177.

Rubber-roll beaner. By Roy Bainer. Farm implement news. v.59,no.25. December 15, 1938. p.43. Results of tests obtained are particularly significant in that rubber roller machine which was originally designed for use in handling seed beans now appears to be ideal for threshing commercial beans as well. Capacity tests have indicated that it can thresh commercial beans on scale comparable to other machines now in use. Furthermore, power required to operate machine is only about one-half that needed to run standard machine due to fact that straw is not broken during threshing.

Small harvester for family farms. Implement & tractor. v.54,no.2. January 21, 1939. p.18,34.

Tillage machinery. By R. B. Gray. Washington, U.S. Govt. print. off., 1939. Yearbook separate no.1625. Reprint from pages 329-346.

Farm Plan.

Reorganizing the farm for efficient land use. By R. J. Friant. Morgantown, W. Va., 1938. 15p. West Virginia university. Cooperative extension work in agriculture and home economics. Circular no.322.

Study of farm organization by types of farms in Uinta basin, Utah. By George T. Blanch. Logan, Utah, 1939. 91p. Utah state agricultural college. Agricultural experiment station. Bulletin no.285.

Farm Power.

Economics of the labour problem. By K. A. H. Murray. In the Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.1-11.

Farm organization and the productivity of labour. By R. McG. Carslaw. In Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.25-38.

Labour organization in practice. By Edward Lousley. In Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.61-69.

Labor productivity and work opportunities in cotton growing. Monthly labor review. v.48,no.1. January, 1939. p.61-65. Estimated amount of labor required during 1917-1921 averaged 3,089,000,000 man-hours, and during 1933-1936, only 2,489,000,000 man-hours.

Modernizing and mechanizing old farming principles and methods on the Wiltshire hills. By T. K. Jeans. In Fourth Oxford farming conference, New Playhouse, Oxford, January 3-5, 1939. Oxford, Alden press, 1939. p.46-54.

Motive power on potato farms in Maine. By W. E. Schrumpf. In Report of progress for year ending June 30, 1938. Orono, Me., 1938. p.282-283. Maine, Agricultural experiment station.

Farmhouses.

Housing requirements of farm families in the United States. By Maud Wilson. Washington, U.S. Govt. print. off., 1939. 40p. U.S. Department of agriculture. Miscellaneous publication no.322.

Fatigue of Metals.

Recent developments in European research on fatigue of metals. By Richard P. Seelig. American Society for Testing Materials. Bulletin. No.95. December, 1938. p.15-23.

Feed Grinders and Grinding.

Electric farm chopper. By J. W. Purcell. Canadian society of technical agriculturists review. No.4. March, 1935. p.203-204. Faults: 1. Power: demand erratic and under certain conditions, excessive. 2. Plugging of plates by starch filling indents. 3. Worm capacity: too great, tended to pass more to plate than could be handled. 4. Machine speed specified by manufacturer too high for power specified.

Feed grinding on the Wendig proving farm. Electricity on the farm. v.12,no.1. January, 1939. p.11.

Fences.

Fences and fencing on Indiana farms. Indiana farmers guide. v.94,no.24. November 19, 1938. p.3,8,22.

Fences -- Electric.

High-leakage transformers as alternating current fence controllers. By H. W. Riley and S. Krasik. Agricultural engineering. v.20,no.1. January, 1939. p.7-10,12.

These hot fences. By H. N. Stapleton. New England homestead. v.112,no.6. March 25, 1939. p.7,9.

Fertilizer Placement.

Fertilizer placement and soil disturbance studies. By H. P. Smith. In Fiftieth annual report, 1937. College station, Tex., 1938. p.153-155. Texas agricultural experiment station.

Fertilizers.

Bio-dynamic farming. By Fred Heckles. Farmer's digest. v.2,no.10. February, 1939. p.29-31. Bio-dynamic farmer and gardener work entirely with organic fertilizer materials, animal manures and plant compost. Both varieties of refuse material are rotted down to humus before they are applied to fields or gardens. Simple technique of composting for both, including careful piling for conservation of moisture and organic content, produces in comparatively brief time substances rich in neutral colloidal humus. Tests have taken form of controlled experimentation under scientifically exact conditions. And, what is of even more practical importance to working farmer and gardener, they have taken form of five-year comparisons on larger farms where complete and accurate records of costs and income and quantity of yield have been kept.

Experiments with lime, fertilizers, and varieties of field crops in the cotton and peanut section of Virginia. By E. T. Batten and T. B. Hutcheson. Blacksburg, Va., 1932. 21p. Virginia polytechnic institute. Virginia agricultural experiment station. Bulletin no.284.

Fertilizers. (Cont'd).

Fertilizer statistics for Texas, 1926-1938. By G. S. Fraps and T. L. Ogier. College station, Tex., 1939. 22p. Texas agricultural experiment station. Bulletin no.572.

Fire Protection.

Tests show fire resistance of wood stud partitions filled with mineral wool. American builder. v.61,no.2. February, 1939. p.78. Table gives fire resistance of wood stud partitions filled with mineral wool as shown in tests conducted by National Bureau of standards.

Flax.

Flax as a winter crop in South Texas. By E. S. McFadden and P. C. Mangelsdorf. In Fiftieth annual report, 1937. College station, Tex., 1938. p.89-90. Texas agricultural experiment station.

Floods and Flood Control.

Engineering planning in flood control. By E. R. Kinnear. Soil conservation. v.4,no.7. January, 1939. p.178-180. Sequence of steps for formulating flood-control plan should be: 1. Accumulation of physical and statistical data and an accurate classification and evaluation of damages. 2. Classification and evaluation of elements contributing to damages. 3. Planning and designing of most economical control practices for prevention or amelioration of damages. 4. Coordination of agricultural flood-control planning and designing with all other flood-control or water-use plans or developments in watershed. 5. Evaluation of benefits accruing from practices in terms of reduction of potential physical and economic damage. 6. Evaluation of indirect benefits which would result from establishment of control practices with consideration of long-time land-use and social problems within watershed. 7. Balancing of cost against total benefits derived. 8. Determination of suggested sequence of operations with allocations of budgeted amounts over required period of years, looking towards projected date of completion; and determination of most economical method of financing construction of control measures, giving full consideration to private, State, and Federal interests involved.

Flood control in soil conservation. By W. C. Lowdermilk. Agricultural engineering. v.20,no.1. January, 1939. p.17-20.

Flood in 1838 and the regulation of the Danube. By W. Lászlóffy. Royal Hungarian Ministry of agriculture. Hydraulic proceedings: short summaries of the articles. 1938--I. p.15-16. In the Hungarian text p.39-64.

Floods and Flood Control. (Cont'd).

Flood-protection data: progress report of the committee. Proceedings: American society of civil engineers. v.65,no.1. January, 1939. p.93-100.

Maximum probable flood and its relation to spillway capacity. By S. M. Bailey and G. R. Schneider. Civil engineering. v.9,no.9. January, 1939. p.32-35. Doubtless concept of a "50-year flood" or a "100-year flood" has its place in economic analysis of flood control projects. But it is tenuous concept at best, and one may seriously question whether it should ever be applied in determining proper spillway capacity for dam. Certainly "rational" method, which has been developed in recent years, takes into account more of important factors affecting flood flows than does any variation of so-called "probability" method. In its use, however, question arises of what storm, or maximum probable rainfall, should be "transposed" to drainage area in question. Accompanying article is set of isohyetal maps which go far towards answering this question. In addition to explaining construction of these maps authors discuss their application, concluding with brief step-by-step summary of procedure of estimating spillway capacity.

Floors.

Flooring materials for piggeries. By J. N. Dominy. Journal of the Ministry of agriculture. v.45,no.8. November, 1938. p.788-792.

Flow Meters.

Influence of steam-flow metering equipment on piping design. By R. M. Van Duzer. Mechanical engineering. v.60,no.11. November, 1938. p.834-836. Paper serves to focus attention of those responsible for station design on question of steam-flow measurement. Elimination of expensive water-weighing equipment and general acceptance of steam-flow measurements by both manufacturers and users as criterion of turbine and boiler performance lends importance to this phase of plant design. This use of flow measurements instead of water weights for acceptance testing has resulted from better understanding of various factors influencing accuracy.

Influence of steam-flow metering equipment on piping design. By R. M. Van Duzer, Jr. Southern power journal. v.57,no.1. January, 1939. p.37-40.

Flow of Air.

Flow of air and its distribution through ducts. By J. R. Zwickl. Heating and ventilating. v.36,no.2. February, 1939. p.15-17. Part I.--Frictionless flow and velocity head.

Flow of Air. (Cont'd).

Friction losses in asbestos prefabricated ducts. Heating and ventilating. v.36,no.2. February, 1939. p.39-40.

Flumes.

Dual Parshall flumes measure wide range of flows. By H. S. Riesbol. Civil engineering. v.9,no.1. January, 1939. p.17-19. Measurement of runoff of very small watersheds is complicated by fact that base flow may be less than 1 cu. ft. per sec, while 100-year flood may be thousand times as great. No single hydraulic device can cover accurately such extreme range; hence series of measuring units is required. Describes adaptation of Parshall flumes to such conditions, and explains why they were selected in preference to weirs on number of small watersheds in eastern Ohio.

Foods.

Canned & dried foods; United States export trade in 1938. By C. E. Birgfeld. Washington, U.S. Bureau of foreign and domestic commerce, 1938. 30p. Processed.

Foods, Frozen.

Commercial aspects of the frozen food industry. By Harry Carlton. Ice cream trade journal. v.34,no.12. December, 1938. p.28.

Frozen food industry, 1937-1938; short list of references. Compiled by C. L. Whitehorn. Washington, Library, U.S. Bureau of agricultural economics, 1938. 10p. Typewritten.

Frost Protection.

Frost protection expenditures increased citrus production costs in 1937. California citrograph. v.24,no.2. December, 1938. p.50. California citrus league figures show influence of freeze on yields and costs per acre and per box.

Fruit, Ripening of.

Artificial ripening of fruits with acetylene. By D. Kaltenbach. Monthly bulletin of agricultural science and practice. Year 30, no.1. January, 1939. p.1T-10T. Although acetylene gas has not been used as long as ethylene, and although experiments with former gas have so far been made on very limited numbers of fruits at different stages of ripening, these experiments suffice to justify its introduction into commercial practice for certain fruits. Before recommending this treatment for general use on same basis as ethylene, however, it would be advisable to continue research work on other varieties of fruits.

Fruit, Ripening of. (Cont'd).

Effect of ammonia on nuts in storage. By Dean H. Rose. Ice and refrigeration. v.96,no.2. February, 1939. p.147-148. Paper summarizes results obtained in series of tests in which shelled and unshelled almonds, pecans, Persian (English) walnuts, and peanuts were exposed to various concentrations of ammonia for different lengths of time at two different temperatures.

Fuels.

Effect of temperature of digestion, chemical composition, and size of particles on production of fuel gas from farm wastes. By G. H. Nelson and others. Journal of agricultural research. v.58,no.4. February 15, 1939. p.273-287. Research on anaerobic decomposition of farm waste for production of methane and other gases for use as fuel on farm has been stimulated by development of method of treating sewage in which settleable organic solids are digested anaerobically by bacteria. Large quantities of gas having relatively high calorific value are produced by this method. There are many difficulties, however, in application of this sewage-sludge digestion process to fibrous farm wastes. Their tendency to lie close to or on surface of liquid media in which they are suspended introduces particularly difficult mechanical problem, and their low nitrogen content, in contrast to sewage sludges, makes it necessary to provide additional nitrogen. Purpose of investigation reported in paper was to ascertain effect of (1) temperature of digestion, (2) chemical composition, and (3) size of particles on rate and quantity of gas produced from fibrous farm wastes by anaerobic microbial decomposition.

New slants on byproduct power. Power. v.83,no.4. April, 1939. p.96-98. Engineers learn how utilities and industrials can save by joint generation of steam and power, methods of burning byproduct and waste fuels, and developments in feedwater research and carry over reduction, at ASME Spring meeting.

Selection of solid fuels from the viewpoint of the small consumer. By P. Nicholls. Heating, piping and air conditioning. v.11, no.2. February, 1939. p.114-118. Discussion restricted to consideration of some of factors associated with selection of solid fuels and does not include more general, and controversial, subject of comparison of solid, liquid, and gaseous fuels.

Gas Producers.

Europe turns to gas producers. By F. A. M. Wulfinghoff. Power. v.83,no.2. February, 1939. p.90-92. Reports of advances in application to transportation, marine, and stationary service have reawakened American interest in this forgotten field. Article highlights significant technical features of modern European gas-producer practice.